DE 23 22 712

Translated from German by the Ralph McElroy Translation Company
910 West Avenue, Austin, Texas 78701 USA

Code: 5000-77285

FEDERAL REPUBLIC OF GERMANY
GERMAN PATENT OFFICE
PATENT NO. 2 322 712
(Offenlegungsschrift)

Int. Cl.:	A 61 k 7 06 . C 07 c, 143 80
German Cl.:	30 h 13 05 12 q, 6 03
Filing No.:	P 23 22 712.5-41
Filing Date:	May 5, 1973
Publication Date:	November 21, 1974

AGENT FOR SCALP TREATMENT

Inventor:	Dr. Valentin Köhler Julian Köhler 8702 Gerbrunn
Applicant:	Dr. Valentin Köhler Julian Köhler 8702 Gerbrunn

Petition for examination submitted in accordance with § 28b of the Patent Law.

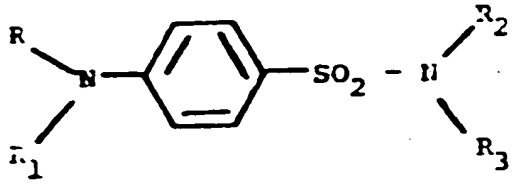
There are already known agents for scalp care that are topically used to counteract hair loss, oily hair, increased dandruff and itching of the scalp. The known agents of this kind contain, for example, blood flow stimulating compounds like nicotinates, anabolic hormones like estradiol or prednisolone, panthenol or colloidal sulfur.

The task on which the invention is based now consists of developing new topically applicable agents for care of the scalp that have a better effect than the agents previously known in this area.

The agents in accordance with the invention for treatment of the scalp consist of sulfanilamide and/or at least one sulfanilamide derivative in a substantially known carrier material that is pharmaceutically acceptable for topical application.

It was surprisingly established that when the scalp is treated with an agent in accordance with the invention the itching of the scalp and excess secretion by the sebaceous glands of the scalp disappears, dandruff formation and hair loss as well as graying of the hair decline, the individual hairs become stronger, hair growth is promoted, and the hair develops a voluminous appearance. Allergic phenomena were not observed.

In principle, basically all sulfanilamide derivatives can be used, where of course the effect of each one will not necessarily be the same. Preferably, sulfanilamides of the general formula



or their metal or acid salts that are pharmaceutically acceptable for topical application are preferably used as the sulfanilamide derivatives, wherein the above formula R means a hydrogen atom, an acetyl, cinnamyl, maleinyl, succinyl, glycosyl, lactosyl, phthalyl, carboxymethyl, benzyl, sulfo-(C_1-C_2)-alkyl, disulfophenylpropyl or disulfoxypropyl residue, R_1 means a hydrogen or a carboxymethyl group, R_2 means a hydrogen atom or an acetyl group and R_3 means a hydrogen atom, a sulfomethyl, sulfoethyl, cyano, acetyl, hydroxymethyl, hydroxymethylcarbamoyl, guanyl, phenyl or benzoyl group optionally substituted by one or two substituents, the group $-CH-R_4$, in which R_4 means an alkyl or alkenyl group, the group $-(CH_2)_n-CX-NR_5R_6$, in which n means 0 or 1, X means O or S and R_5 and R_6 mean hydrogen atoms or alkyl groups with 1 to 4 carbon atoms, or it means a five member or six-member heterocyclic ring.

If R_3 means a substituted phenyl residue or benzoyl residue, the substituents are expediently halogen atoms, especially bromine atoms or iodine atoms, nitro groups, hydroxyl groups, carboxyl groups, alkyl groups with 1 to 4 carbon atoms, or the group $-SO_2NR_5R_6$, where R_5 and R_6 have the above meaning.

If R_3 means a five-member or six-member heterocyclic residue, such groups are expediently isoxazolyl, oxazolyl, isothiazolyl, thiazolyl, pyrazolyl or thiadiazolyl residues that are unsubstituted or substituted by one or two alkyl groups with 1 to 4 carbon atoms, especially methyl groups, or phenyl residues, or pyridyl, pyridazinyl, pyrimidinyl, pyrazinyl, triazinyl or quinoxalinyl residues that are unsubstituted or substituted by 1 or 2 alkyl groups with 1 to 2 carbon atoms, alkoxy groups with 1 or 2 carbon atoms, chlorine atoms or sulfomethyl groups, especially methyl or methoxy groups.

Among the sulfanilamide derivatives mentioned above, those in which R_3 is a hydrogen atom and R_4 is a thiazolyl or isothiazolyl residue optionally substituted by a methyl, ethyl, propyl or butyl group, have proved to be particularly successful in the agents in accordance with the invention. Here the sulfonamide sulfanilic acid [thiazolyl-(2)-amide] is especially preferred.

Examples of other particularly usable compounds are:

3-iodo-4-aminobenzoylsulfonyl-(1)-amide,

maleic acid mono-[4-sulfamoyl anilide] or its sodium salt,

succinic acid mono-[4-sulfamoyl anilide],

N^4-D-glycosylsulfanilamide,

N^4-lactosylsulfanilamide,

N-[4-sulfamoylphenyl] glycine or its sodium salt,

N^4,N^4-bis[carboxymethyl]sulfanilamide or its sodium salt,

[4-Sulfamoylanilino]methanesulfinic acid or its sodium salt,

[4-Sulfamoylanilino]methanesulfonic acid or its sodium salt,

1-[4-sulfamoylanilino]ethanesulfonic acid (1) or its sodium salt,

1-[4-sulfamoylanilino]-3-phenylprolpanedisulfonic acid-(1,3) or its sodium salt,

N^4-benzylsulfanilamide,

N^4-cinnamylsulfanilamide,

3-[4-sulfamoylphenylimino]-5-phenyl-1-[4-sulfamoylphenyl]pyrrolidone-(2),

Sulfanilamidomethanesulfonic acid or its triethanolamine salt,

N-sulfanilylglycin diethylamide,

N^1-cyanosulfanilamide,

Sulfanilyl urea,

N-Isopropyl-N'-sulfanilylurea,

Sulfanilylthiourea,

N^1-Guanylsulfanilamide,

N^4-Acetyl-N^1-guanylsulfanilamide,

N^1-Acetylsulfanilamide or its sodium salt,

N^1-[3-methylcrotonoyl]sulfanilamide,

N^1-Stearoylsulfanilamide,

Sulfanilic acid [4-iodo anilide],

Sulfanilic acid [3,5-dibromo anilide],

N^4-Acetylsulfanilic acid [4-nitro anilide],

4-Sulfanilamidosalicylic acid,

N^1-Benzoylsulfanilamide,

N_1-[2,4-dimethylbenzoyl]sulfanilamide,

N^1-[4-isopropyloxybenzoyl]sulfanilamide,
Sulfanilic acid [4-sulfamoyl anilide],
N^4-Acetylsulfanilic acid [4-sulfamoyl anilide],
Sulfanilic acid [4-methylsulfamoyl anilide],
Sulfanilic acid [4-dimethylsulfamoyl anilide],
Sulfanilic acid [5-methylisoxazolyl-(3-amide],
Sulfanilic acid [3,4-dimethylisoxazolyl-(5-amide],
Sulfanilic acid [3,4-dimethylisoxazolyl-(5)-amide] or its sodium or diethanolamine salt,
Sulfanilic acid [acetyl-(3,4-dimethylisoxazolyl)-(5)-amide],
Sulfanilic acid [4,5-dimethyloxazolyl-(2)-amide],
Sulfanilic acid [thiazolyl-(2)-amide] or its sodium or aluminum salt,
Maleic acid mono-[4-(thiazolyl-(2-sulfamoyl) anilide],
Succinic acid mono-[4-(thiazolyl-(2)-sulfamoyl) anilide or its bismuth salt,
4-Iodo-5-aminophthalic acid-2-mono-[4-(thiazolyl-(2)-sulfamoyl) anilide],
N^4-[1-sulfoethyl]-sulfanilic acid [thiazolyl-(2)-amide] or its sodium salt,
1-[4-(thiazolyl-(2)-sulfamoyl)anilino]propane-(1,3)-diol disulfate or its disodium salt,
Sulfanilic acid [4-methylthiazolyl-(2)-amide],
Sulfanilic acid [3-methyliosthiazolyl-(5)-amide],
Sulfanilic acid [1-phenylpyrazolyl-(5)-amide],
Sulfanilic acid [1,3,4-thiadiazolyl-(2)-amide],
Sulfanilic acid [5-methyl-1,3,4-thiadiazolyl-(2)-amide],
Sulfanilic acid [5-ethyl-1,3,4-thiadiazolyl-(2)-amide],
Sulfanilic acid [pyridyl-(2)-amide], its sodium, calcium or aluminum salt,
Succinic acid mono-[4-(pyridyl-(2)-sulfamoyl) anilide] or its sodium salt,
Sulfanilic acid [(x-sulfomethylpyridyl-(2)-amide] or its sodium salt,
Sulfanilic acid [6-chloropyridazinyl-(3)-amide],
Sulfanilic acid [6-methoxypyridazinyl-(3)-amide],
Sulfanilic acid [acetyl-(6)-methoxypyridazinyl-(3)-amide],
Sulfanilic acid [pyrimidinyl-(2)-amide],
Sulfanilic acid [pyrimidinyl-(2)-amide] or its sodium salt,
Sulfanilic acid [4-methylpyrimidinyl-(2)-amide] or its sodium salt,
Sulfanilic acid [5-methylpyrimidinyl-(2)-amide],
Sulfanilic acid [4,6-dimethylpyrimidinyl-(2)-amide],
Sulfanilic acid [2,6-dimethylpyrimidinyl-(4)-amide],
Sulfanilic acid [5-methoxypyrimidinyl-(2)-amide],
Sulfanilic acid [6-methoxypyrimidinyl-(4)-amide],

Sulfanilic acid [6-methoxy-2-methylpyrimidinyl-(4)-amide],

Sulfanilic acid [2,6-dimethoxypyrimidinyl-(4)-amide],

Sulfanilic acid [pyrazinyl-(2)-amide],

Sulfanilic acid [3-methoxypyrazinyl-(2)-amide],

Sulfanilic acid [4,6-dimethoxy-1,3,5-triazinyl-(2)-amide],

Sulfanilic acid [quinoxanilyl-(2)-amide],

Phthalic acid mono-[4-acetylsulfamoyl anilide],

Phthalic acid mono-[4-(hydroxymethylcarbamoylsulfamoyl) anilide],

Phthalic acid mono-[4-(thiazolyl-(2-sulfamoyl) anilide], its aluminum salt or o-hydroxyquinolinium salt,

Phthalic acid mono-[4-(5-methyl-1,3,4-thiadiazolyl-(2)-sulfamoyl) anilide],

Pyridine dicarboxylic acid (2,3)-[4-sulfamoyl anilide]-(2) and

N^4-formyl-N^1-[2,6-dimethylpyrimidinyl-(4)-] sulfanilamide.

The carrier material can be any carrier material that is conventional for topical applications such as a salve base, a powder or, above all, a liquid carrier material like water, ethanol or an aqueous ethanol solution. The sulfanilamide and/or the sulfanilamide derivative can be in dissolved, emulsified or suspended form in the liquid carrier materials. In the latter cases it is expedient to shake the emulsion or suspension before use in order to distribute the active agent uniformly in the liquid carrier material. Liquid carrier materials like water or ethanol are particularly preferred because of this, since they can be rubbed particularly intensively into the scalp.

Of course, the agents can contain, in addition to the sulfanilamide or its derivatives, other substances that are substantially known for scalp treatment, so that one can use, for example, known hair tonics or hair treatment agents to which the said sulfonamides are added as carrier materials.

The sulfanilamide and/or its derivatives are contained in the liquid carrier materials preferably in an amount of 0.1 to 10 g per 100 mL of the carrier material, with the usual concentrations being 1 to 5 g/100 mL.

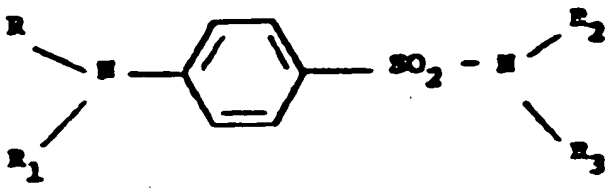
Topical application takes place in the usual way as with hair tonics, where one expediently carries out the treatment initially every other day and then later every four to five days and at the end of the treatment time one can even fall back on treatment intervals of 14 days. With this treatment, for example, with an agent containing 1 g sulfanilic acid [thiazolyl-(2)-amide] in 100 mL of water or aqueous alcohol, a relatively rapid removal of oil from the hair occurs, the increased dandruff formation and hair loss decreases and there is a very rapid end to scalp itch. The hair becomes more voluminous, and the period for the return of these symptoms becomes increasingly greater in the course of treatment. A significant decline of hair

loss occurs with controlled shampooing and daily combing. It is additionally notable that time until shampooing becomes necessary increases sharply, for example, from two to fourteen days. Dandruff formation and itching of the scalp can be remedied after only three days of use.

Claims

1. An agent for treatment of the scalp, which is characterized by the fact that it consists of sulfanilamide and/or at least one sulfanilamide derivative in a substantially known carrier material that is pharmaceutically acceptable for topical application.

2. An agent as in Claim 1, which is characterized by the fact that it contains as sulfanilamide derivatives ones of the general formula



or their pharmaceutically compatible metal or acid salts, where R means a hydrogen atom, an acetyl, cinnamyl, maleinyl, succinyl, glycosyl, lactosyl, phthalyl, carboxymethyl, benzyl, sulfo-(C_1-C_2)-alkyl, disulfophenylpropyl or disulfophenylpropyl residue, R_1 means a hydrogen atom or a carboxymethyl group, R_2 means a hydrogen atom or an acetyl group and R_3 means a hydrogen atom, a sulfomethyl, sulfoethyl, cyano, acetyl, hydroxymethyl, hydroxymethylcarbamoyl, guanyl, phenyl or benzoyl groups optionally substituted by one or two halogen atoms, nitro, hydroxyl, carboxyl, C_1-C_4 alkyl or $SO_2NR_5R_6$ groups, in which R_5 and R_6 mean hydrogen atoms or alkyl groups with 1 to carbon atoms, the group $-(CH_2)_n$-CX-NR_5R_6, in which n means 0 or 1, X means S and R_5 and R_6 mean hydrogen atoms or alkyl groups with 1 to 4 carbon atoms, an isoxazolyl, oxazolyl, thiazolyl, isothiazolyl, pyrazolyl or thiadiazolyl residue optionally substituted by one or two alkyl groups with 1 to 2 carbon atoms or a phenyl residue, or a pyridyl, pyridazinyl, pyrimidinyl, pyrazinyl, triazinyl or quinoxalinyl residue optionally substituted by 1 or 2 alkyl groups with 1 to 2 carbon atoms, alkoxy groups with 1 to 2 carbon atoms, chlorine atoms or sulfomethyl groups.

3. An agent as in Claim 2, which is characterized by the fact that it contains as sulfanilamide derivatives ones in which R_3 means a hydrogen atom and R_4 means a thiazolyl or isothiazolyl residue optionally substituted by a methyl, ethyl, propyl or butyl group.

4. An agent as in Claim 3, which is characterized by the fact that it contains sulfanilic acid [thiazolyl-(2)-amide] as sulfanilamide derivative.

5. An agent as in Claims 1-4, which is characterized by the fact that it contains the sulfanilamide and/or sulfanilamide derivatives in a liquid carrier material in a concentration of 0.1 to 10 g, preferably 1 to 5 g, per 100 mL of carrier material.